General

Guideline Title

ACR Appropriateness Criteria® hematospermia.

Bibliographic Source(s)

Hosseinzadeh K, Oto A, Allen BC, Coakley FV, Friedman B, Fulgham PF, Hartman MS, Heller MT, Porter C, Sahni VA, Sudakoff GS, Verma S, Wang CL, Yoo DC, Remer EM, Eberhardt SC, Expert Panel on Urologic Imaging. ACR Appropriateness CriteriaÂ® hematospermia. Reston (VA): American College of Radiology (ACR); 2016. 6 p. [29 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Hosseinzadeh K, Remer EM, Leyendecker JR, Eberhardt SC, Friedman B, Fulgham PF, Goldfarb S, Hartman MS, Lazarus E, Lockhart ME, Majd M, Oto A, Porter C, Sudakoff GS, Verma S, Expert Panel on Urologic Imaging. ACR Appropriateness Criteria® hematospermia. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 6 p. [54 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

ACR Appropriateness Criteria®

Clinical Condition: Hematospermia

Variant 1: Man <40 years of age, transient or episodic hematospermia, and no other symptoms or signs of disease.

Radiologic Procedure	Rating	Comments	RRL*
US pelvis (prostate) transrectal	3		O
MRI pelvis without IV contrast	3		O
MRI pelvis without and with IV contrast	3		O
CT pelvis with IV contrast	1		☢☢☢
CT pelvis without IV contrast	1		☢☢☢
CT pelvis without and with IV contrast	1		☢☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative**

Radiologic Procedure	Rating	Comments	RRL*
Arteriography pelvis	1		☢☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Man ≥40 years of age, or man of any age with persistent hematospermia, or hematospermia accompanied by other associated symptoms or signs of disease.

Radiologic Procedure	Rating	Comments	RRL*
US pelvis (prostate) transrectal	8		O
MRI pelvis without and with IV contrast	8	This procedure is indicated if TRUS is negative or inconclusive. MRI can be used to evaluate for suspected prostate cancer or ejaculatory duct obstruction. This procedure should include dynamic contrast-enhanced MRI for suspected prostate cancer.	O
MRI pelvis without IV contrast	7	This procedure is indicated if TRUS is negative or inconclusive. MRI can be used to evaluate for suspected prostate cancer or ejaculatory duct obstruction.	O
CT pelvis with IV contrast	2		☢☢☢
Arteriography pelvis	2		☢☢☢☢
CT pelvis without and with IV contrast	1		☢☢☢☢
CT pelvis without IV contrast	1		☢☢☢
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			***Relative Radiation Level**

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Summary of Literature Review

Introduction/Background

Hematospermia (HS) or hemospermia, the presence of blood in the ejaculate or semen, has been recognized for centuries. Although it is not uncommon to encounter HS in clinical practice, the exact prevalence and incidence are not known. Most men with HS are young (<40 years of age), and HS may occur either as a single episode or repeatedly over time. It is typically a cause of great anxiety to men, mainly due to the imagined possibility of underlying malignancy or venereal disease. HS may be associated with pathology in the prostate gland, seminal tract (seminal vesicles, vasa deferentia, and ejaculatory ducts), verumontanum, urethra, urinary bladder, epididymis, or testes, with cited causes reported to include prior prostatic biopsy, prostatic calculi, inflammatory or infectious conditions such as prostatitis or seminal vesiculitis, ductal obstruction, prostatic cyst formation, and rarely vascular malformations. The majority of cases of HS were thought to be idiopathic in nature; however, as a result of improved imaging techniques, the number of cases labeled as idiopathic has decreased significantly, with one of the main sites of bleeding occurring in the seminal vesicles. Of specific etiologies, infectious or inflammatory conditions are the most common, accounting for approximately 40% of HS cases overall. An infectious or inflammatory condition of the urogenital tract is the most common etiology in men <40 years of age.

Malignant tumors are infrequently associated with HS but need to be excluded in men ≥40 years of age. In one study involving 26,126 men who underwent routine prostate cancer screening, only 0.5% had HS, but 13.7% who reported HS were diagnosed with prostate cancer. Moreover, the presence of HS was shown to be a significant predictor of prostate cancer diagnosis (odds ratio =1.73) after adjusting for age, serum prostate-specific antigen (PSA), and digital rectal examination results through a logistic regression model. Other studies have reported a lower percentage of prostate cancer in men ≥40 years of age presenting with HS, ranging from 2.6% to 6%. Therefore, when a man ≥40 years of age presents with HS, screening for prostate cancer is recommended. Furthermore, when HS is persistent or refractory or has concomitant urological tract symptoms, noninvasive imaging and other diagnostic testing are typically performed to exclude an underlying correctible etiology, which includes obstruction or stricture at the level of the verumontanum, calculi, and cysts.

Overview of Imaging Modalities

Transrectal Ultrasound (Ultrasound Pelvis [Prostate] Transrectal)

Transrectal ultrasound (TRUS) is a safe, inexpensive, effective, noninvasive, radiation-free imaging technique often used as the primary screening or diagnostic modality in men with HS to evaluate the prostate gland and seminal tract. Patients are typically placed in left lateral decubitus position, and grayscale images are obtained with a 5.0- to 10-MHz TRUS transducer in axial and sagittal planes. Color and power Doppler images may also be acquired, particularly when prostate cancer is suspected and prostatic biopsy is contemplated. TRUS-guided aspiration or biopsy of the seminal vesicles or prostate gland may be performed to further elucidate the site of bleeding, to provide a definitive diagnosis if a lesion is detected, or to confirm the presence of ejaculatory duct obstruction.

Magnetic Resonance Imaging

Magnetic resonance imaging (MRI), with its excellent soft-tissue contrast, provides radiation-free multiplanar, high-spatial-resolution anatomic evaluation of the prostate gland and seminal tract. Imaging should be performed at either 1.5T or 3T, although there is no consensus at this time on the appropriate coil selection or field strength. The fundamental advantage of 3T over 1.5T is increased signal-to-noise ratio, which improves the spatial, temporal, and spectral resolution. Comparable performance between multichannel phased array coil MRI of the prostate at 3T and endorectal phased array coil MRI at 1.5T has been reported. As opposed to TRUS, MRI is operator independent and can be performed when TRUS is unsatisfactory or nondiagnostic. Subsequently, small field-of-view axial T1-weighted images and axial, sagittal, and coronal T2-weighted images are obtained for high-resolution evaluation of the prostate gland, seminal vesicles, ejaculatory ducts, and ampullary portions of the vasa deferentia, followed by large field-of-view images to evaluate for pelvic lymphadenopathy. The increasing availability of 3T MRI, which offers a higher signal-to-noise ratio and improved spatial resolution, may preclude the use of an endorectal coil for evaluating the seminal tract.

Computed Tomography

Computed tomography (CT) is a noninvasive imaging modality that uses ionizing radiation to identify calcifications, gross soft-tissue masses, or cystic lesions of the prostate gland and seminal vesicles. However, it has limited value in the etiologic determination of HS given its lack of soft-tissue contrast and limitation in differentiating structural changes of the prostate and seminal tract.

Pelvic Angiography

Pelvic angiography can be useful to evaluate for vascular causes of HS and is mainly reserved for men with intractable HS with or without hematuria when clinical, laboratory, and noninvasive imaging evaluations have not revealed an etiology. If an arterial source of hemorrhage is identified, such as from the internal pudendal artery, transcatheter arterial embolization may be performed in the same session for therapeutic purposes.

Discussion of Imaging Modalities by Variant

Factors that determine the extent of investigation are patient age, duration of HS, and associated symptoms and signs. However, a confounding issue is that currently there are no consensus or society guidelines on the distinction between transient or episodic HS and persistent HS. The distinction has been based on either the number of ejaculates or a specific time period, with differing opinions. Ultimately the decision to pursue further investigation will be made by the referring physician, typically a urologist.

Variant 1: Man <40 Years of Age, Transient or Episodic Hematospermia, and No Other Symptoms or Signs of Disease

Imaging assessment is not generally recommended for this patient population because watchful waiting, reassurance, and routine clinical evaluation may suffice, given that HS is apt to be a benign and self-limited condition unassociated with a significant underlying disease process. The approach to any patient with HS begins with a detailed history and physical examination. Determination of the origin of bleeding within the ejaculate is vital, as postcoital hemorrhage from the patient's sexual partner may sometimes be mistaken for HS. Laboratory testing includes visual analysis of the ejaculate for red discoloration, microbiological testing, semen analysis, urinalysis and urine culture, and assessment of serum coagulation, a serum chemistry panel, and a complete blood count.

Variant 2: Man Age ≥40 Years of Age, or Man of Any Age with Persistent Hematospermia, or Hematospermia Accompanied by Associated Symptoms or Signs of Disease

Noninvasive imaging techniques, predominantly TRUS and MRI, are recommended in patients ≥40 years of age with persistent or refractory HS or other associated symptoms or signs of disease. All patients ≥40 years of age should be screened for prostate cancer by checking a PSA level. Although not addressed by the medical literature, TRUS or pelvic MRI can be performed to allay anxiety and provide reassurance that no significant pathology exists in patients with negative history and physical examination.

TRUS

Many investigators have reported that TRUS should be used as the first-line imaging tool in this patient population. TRUS is very sensitive for detecting a variety of abnormalities that may involve the prostate gland and seminal tract in the setting of HS, reportedly demonstrating abnormalities in 82% to 95% of men with HS. Abnormalities may include calcifications or calculi in the prostate, ejaculatory ducts, or seminal vesicles; seminal vesicle, ejaculatory duct, or prostatic cysts; benign prostatic hypertrophy; prostatitis; and Cowper gland masses. However, it is important to consider that some of these abnormalities can be found in asymptomatic patients, such as benign prostatic hyperplasia and prostatic calcifications, which are age-related changes, and nonobstructing prostatic cysts. TRUS has shown utility in guiding transperineal aspiration of the seminal vesicles. A recent prospective trial enrolled 106 patients with persistent HS and found the diagnostic accuracy of TRUS and transurethral seminal vesiculoscopy was 45.3% and 74.5%, respectively, although the diagnostic accuracy was higher when both modalities were combined. Vesiculoscopy was most useful in the detection of calculi and obstruction/stricture at the level of the verumontanum orifice or ejaculatory duct.

Magnetic Resonance Imaging

MRI has been recommended when TRUS results are negative or inconclusive. It should be emphasized that MRI has no established role in screening for prostate cancer; the utility of MRI in this patient population is in demonstrating anatomic abnormalities in the prostate gland and ejaculatory tract that may be accounting for the HS. The multiplanar ability of MRI to accurately depict structural changes in the prostate, seminal vesicles, ampulla of vas deferens, and ejaculatory ducts has enabled the modality to be particularly useful in determining the organ of origin of midline or paramedian prostatic cysts and to provide more accurate causative information compared to TRUS regarding ejaculatory duct obstruction and location and age of hemorrhage within the seminal tract. Seminal vesicle width ≥1.7 cm or tubular duct diameter >5 mm is consistent with dilatation or enlargement and more likely caused by distal ejaculatory duct obstruction in the setting of persistent HS. This information aids in determining optimal surgical management in cases of transurethral resection of the ejaculatory duct or appropriate selection of ejaculatory duct orifice for cannulation during vesiculoscopy.

Computed Tomography

CT has very limited value in the etiologic determination of HS for the reasons described above.

Pelvic Angiography

Angiography has been reported sparsely in the literature to be useful for vascular masses when evaluating men with intractable HS with or without hematuria when clinical, laboratory, and noninvasive imaging evaluations have not revealed the etiology. If an arterial source of hemorrhage is identified, transcatheter arterial embolization may be performed during the same session as well.

Summary of Recommendations

- HS is an anxiety-provoking but otherwise generally benign and self-limited condition that is infrequently associated with significant underlying pathology, and is most often considered to be idiopathic in nature.
- Watchful waiting, reassurance, and routine clinical evaluation typically suffice in men <40 years of age with transient HS and no other symptoms or signs of disease. When a cause can be identified, infection of the urogenital tract is the most common etiology of HS in men <40 years of age.
- Noninvasive imaging techniques, predominantly TRUS and MRI, can be used in men ≥40 years of age or men of any age with persistent or refractory HS or other associated symptoms or signs of disease. In men ≥40 years of age who have HS, screening for prostate cancer is advised.

Abbreviations

- CT, computed tomography
- IV, intravenous
- MRI, magnetic resonance imaging
- TRUS, transrectal ultrasound
- US, ultrasound

Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
O	0 mSv	0 mSv
☢	<0.1 mSv	<0.03 mSv
☢☢	0.1-1 mSv	0.03-0.3 mSv

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
☢☢☢	1-10 mSv	0.3-3 mSv
☢☢☢☢	10-30 mSv	3-10 mSv
☢☢☢☢☢	30-100 mSv	10-30 mSv
*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "Varies."		

Clinical Algorithm(s)

Algorithms were not developed from criteria guidelines.

Scope

Disease/Condition(s)

Hematospermia

Guideline Category

Diagnosis

Evaluation

Clinical Specialty

Family Practice

Internal Medicine

Radiology

Urology

Intended Users

Advanced Practice Nurses

Health Plans

Hospitals

Managed Care Organizations

Physician Assistants

Physicians

Students

Utilization Management

Guideline Objective(s)

To evaluate the appropriateness of initial imaging procedures for evaluation of hematospermia

Target Population

Patients with hematospermia

Interventions and Practices Considered

1. Ultrasound (US), pelvis (prostate), transrectal
2. Magnetic resonance imaging (MRI), pelvis
    - Without intravenous (IV) contrast
    - Without and with IV contrast
3. Computed tomography (CT), pelvis
    - With IV contrast
    - Without IV contrast
    - Without and with IV contrast
4. Arteriography, pelvis

Major Outcomes Considered

- Utility of imaging modalities in evaluation of hematospermia
- Diagnostic accuracy of imaging modalities in evaluation of hematospermia

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search Summary

Of the 54 citations in the original bibliography, 19 were retained in the final document. Articles were removed from the original bibliography if they were more than 10 years old and did not contribute to the evidence or they were no longer cited in the revised narrative text.

A new literature search was conducted in April 2015 to identify additional evidence published since the *ACR Appropriateness Criteria® Hematospermia* topic was finalized. Using the search strategy described in the literature search companion (see the "Availability of Companion Documents" field), 26 articles were found. Eight articles were added to the bibliography. Eighteen articles were not used due to either poor study design, the articles were not relevant or generalizable to the topic, the results were unclear, misinterpreted, or biased, or the articles were already cited in the original bibliography.

The author added 2 citations from bibliographies, Web sites, or books that were not found in the new literature search.

See also the American College of Radiology (ACR) Appropriateness Criteria® literature search process document (see the "Availability of Companion Documents" field) for further information.

Number of Source Documents

Of the 54 citations in the original bibliography, 19 were retained in the final document. The new literature search conducted in April 2015 identified 8 articles that were added to the bibliography. The author added 2 citations from bibliographies, Web sites, or books that were not found in the new literature search.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Definitions of Study Quality Categories

Category 1 - The study is well-designed and accounts for common biases.

Category 2 - The study is moderately well-designed and accounts for most common biases.

Category 3 - The study has important study design limitations.

Category 4 - The study or source is not useful as primary evidence. The article may not be a clinical study, the study design is invalid, or conclusions are based on expert consensus.

> The study does not meet the criteria for or is not a hypothesis-based clinical study (e.g., a book chapter or case report or case series description);
>
> *Or*
>
> The study may synthesize and draw conclusions about several studies such as a literature review article or book chapter but is not primary evidence;
>
> *Or*
>
> The study is an expert opinion or consensus document.

Category M - Meta-analysis studies are not rated for study quality using the study element method because the method is designed to evaluate individual studies only. An "M" for the study quality will indicate that the study quality has not been evaluated for the meta-analysis study.

Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

The topic author assesses the literature then drafts or revises the narrative summarizing the evidence found in the literature. American College of Radiology (ACR) staff drafts an evidence table based on the analysis of the selected literature. These tables rate the study quality for each article included in the narrative.

The expert panel reviews the narrative, evidence table and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the variant table(s). Each individual panel member assigns a rating based on his/her interpretation of the available evidence.

More information about the evidence table development process can be found in the ACR Appropriateness Criteria® Evidence Table Development document (see the "Availability of Companion Documents" field).

Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

Rating Appropriateness

The American College of Radiology (ACR) Appropriateness Criteria (AC) methodology is based on the RAND Appropriateness Method. The appropriateness ratings for each of the procedures or treatments included in the AC topics are determined using a modified Delphi method. A series of surveys are conducted to elicit each panelist's expert interpretation of the evidence, based on the available data, regarding the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario. The expert panel members review the evidence presented and assess the risks or harms of doing the procedure balanced with the benefits of performing the procedure. The direct or indirect costs of a procedure are not considered as a risk or harm when determining appropriateness. When the evidence for a specific topic and variant is uncertain or incomplete, expert opinion may supplement the available evidence or may be the sole source for assessing the appropriateness.

The appropriateness is represented on an ordinal scale that uses integers from 1 to 9 grouped into three categories: 1, 2, or 3 are in the category "usually not appropriate" where the harms of doing the procedure outweigh the benefits; and 7, 8, or 9 are in the category "usually appropriate" where the benefits of doing a procedure outweigh the harms or risks. The middle category, designated "may be appropriate," is represented by 4, 5, or 6 on the scale. The middle category is when the risks and benefits are equivocal or unclear, the dispersion of the individual ratings from the group median rating is too large (i.e., disagreement), the evidence is contradictory or unclear, or there are special circumstances or subpopulations which could influence the risks or benefits that are embedded in the variant.

The ratings assigned by each panel member are presented in a table displaying the frequency distribution of the ratings without identifying which members provided any particular rating. To determine the panel's recommendation, the rating category that contains the median group rating without disagreement is selected. This may be determined after either the first or second rating round. If there is disagreement after the second rating round, the recommendation is "May be appropriate."

This modified Delphi method enables each panelist to articulate his or her individual interpretations of the evidence or expert opinion without excessive influence from fellow panelists in a simple, standardized, and economical process. For additional information on the ratings process see the Rating Round Information document.

Additional methodology documents, including a more detailed explanation of the complete topic development process and all ACR AC topics can be found on the ACR Web site (see also the "Availability of Companion Documents" field).

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The recommendations are based on analysis of the current medical evidence literature and the application of the RAND/UCLA appropriateness method and expert panel consensus.

Summary of Evidence

Of the 29 references cited in the *ACR Appropriateness Criteria® Hematospermia* document, 23 are categorized as diagnostic references, including 2 good-quality studies and 3 quality studies that may have design limitations. Additionally, 6 references are categorized as therapeutic references, including 1 good-quality study and 3 quality studies that may have design limitations. There are 20 references that may not be useful as primary evidence.

Although there are references that report on studies with design limitations, 3 good-quality studies provide good evidence.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Selection of appropriate imaging procedures for evaluation of hematospermia

Potential Harms

Relative Radiation Level Information

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level (RRL) indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, both because of organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared to those specified for adults. Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® Radiation Dose Assessment Introduction document (see the "Availability of Companion Documents" field).

Qualifying Statements

Qualifying Statements

- The American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.
- ACR seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply society endorsement of the final document.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

Hosseinzadeh K, Oto A, Allen BC, Coakley FV, Friedman B, Fulgham PF, Hartman MS, Heller MT, Porter C, Sahni VA, Sudakoff GS, Verma S, Wang CL, Yoo DC, Remer EM, Eberhardt SC, Expert Panel on Urologic Imaging. ACR Appropriateness CriteriaÂ® hematospermia. Reston (VA): American College of Radiology (ACR); 2016. 6 p. [29 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016

Guideline Developer(s)

American College of Radiology - Medical Specialty Society

Source(s) of Funding

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

Guideline Committee

Committee on Appropriateness Criteria, Expert Panel on Urologic Imaging

Composition of Group That Authored the Guideline

Panel Members: Keyanoosh Hosseinzadeh, MD (*Principal Author*); Aytekin Oto, MD (*Panel Vice-chair*); Brian C. Allen, MD; Fergus V. Coakley, MD; Barak Friedman, MD; Pat F. Fulgham, MD; Matthew S. Hartman, MD; Matthew T. Heller, MD; Christopher Porter, MD; V. Anik Sahni, MD; Gary S. Sudakoff, MD; Sadhna Verma, MD; Carolyn L. Wang, MD; Don C. Yoo, MD; Erick M. Remer, MD (*Specialty Chair*); Steven C. Eberhardt, MD (*Panel Chair*)

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Hosseinzadeh K, Remer EM, Leyendecker JR, Eberhardt SC, Friedman B, Fulgham PF, Goldfarb S, Hartman MS, Lazarus E, Lockhart ME, Majd M, Oto A, Porter C, Sudakoff GS, Verma S, Expert Panel on Urologic Imaging. ACR Appropriateness Criteria® hematospermia. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 6 p. [54 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the American College of Radiology (ACR) Web site .

Availability of Companion Documents

The following are available:

- ACR Appropriateness Criteria®. Overview. Reston (VA): American College of Radiology; 2015 Oct. 3 p. Available from the American College of Radiology (ACR) Web site .
- ACR Appropriateness Criteria®. Literature search process. Reston (VA): American College of Radiology; 2015 Feb. 1 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Evidence table development. Reston (VA): American College of Radiology; 2015 Nov. 5 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Topic development process. Reston (VA): American College of Radiology; 2015 Nov. 2 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Rating round information. Reston (VA): American College of Radiology; 2015 Apr. 5 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Radiation dose assessment introduction. Reston (VA): American College of Radiology; 2016. 4 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Manual on contrast media. Reston (VA): American College of Radiology; 2016. 128 p. Available from the ACR Web site .
- ACR Appropriateness Criteria®. Procedure information. Reston (VA): American College of Radiology; 2016 May. 2 p. Available from the ACR Web site .
- ACR Appropriateness Criteria® hematospermia. Evidence table. Reston (VA): American College of Radiology; 2016. 10 p. Available from the ACR Web site .
- ACR Appropriateness Criteria® hematospermia. Literature search. Reston (VA): American College of Radiology; 2016. 1 p. Available from the ACR Web site .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on September 8, 2011. This summary was updated by ECRI Institute on May 9, 2013. This summary was updated by ECRI Institute on January 10, 2017.

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